

Table 1. Hydrologic characteristics of the Albemarle-Pamlico estuarine system (Data from Giese et al., 1979)

<u>Variable</u>	<u>Pamlico Sound</u>	<u>Albemarle Sound</u>
Drainage Basin (km ²)	27,091	46,309
Surface Area (km ²)	5,335	1,243
Total (km ²)	32,426	47,552
Volume (m ³)	2.60 x 10 ¹⁰	6.58 x 10 ⁹
Depth (m)		
Average	4.8	5.3
Maximum	7.3	9.1
Net Inflow (m ³ /s)		
Precip - Evap	70.8	22.6
Neuse River	172.6	
Pamlico River	152.8	
Roanoke River		251.8
Chowan River		130.2
Other land areas	14.2	82.1
From Albemarle Sound	486.7	
Total (m ³ /s)	897.1	486.7

The maximum total inflow occurs during February when precipitation is relatively high, evaporation is low, and inflow from the Albemarle Sound, which lacks an outlet to the ocean, is at a maximum. Minimum inflow occurs in June when evaporation is very high but inflow from Albemarle Sound is near its annual minimum (data from Giese et al., 1979).

The three-fold change in the volume of freshwater input between February (1542 m³/s) and June (521 m³/s) has an enormous, but not instantaneous, effect on salinity. Highest and lowest average salinities have been noted to occur in April and December, respectively (Epperly and Ross, 1986). Figure 3 shows typical patterns of surface isohalines in April and October when freshwater input varies by a factor of two. Albemarle Sound, except near its juncture with Croatan Sound, is nearly always fresh. However, salinities in Pamlico Sound usually range from 15-20 ppt with the highest values close to the inlets (Schwartz and Chesnut, 1973; Williams et al., 1973). The relative locations of inlets and freshwater sources contribute to general north-to-south and west-to-east salinity gradients. The vertical salinity gradient in Pamlico Sound is on the order of 1 ppt, but may reach 5-10 ppt in the estuarine sections of the Pamlico and Neuse Rivers (Giese et al., 1979; Hobbie and Smith, 1975). Both rivers have long estuarine stretches that vary substantially in their seasonal density structure.